

# DR DRIES DAEMS

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- Email: [daems.dries@gmail.com](mailto:daems.dries@gmail.com)
- Cell phone: +32496495738
- ORCID: 0000-0002-6444-9013
- Date of birth: 20.07.1990
- Nationality: Belgian
- Website: <https://www.driesdaems.com/>

## RESEARCH INTERESTS

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- Social complexity
- Urbanism
- Agent-based modelling
- Complex systems thinking
- Pottery analysis
- Iron Age to Hellenistic Anatolia
- Social-ecological systems
- Network science

## EMPLOYMENT

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### Current positions

- 01/2021 – Current Assistant Professor in Settlement Archaeology and Digital Archaeology at Middle East Technical University (Ankara, Turkey)
- 06/2022 – 12/2025 Visiting Professor in "Datafication" at University of Helsinki (Finland)

### Previous positions

- 10/2021 – 09/2022 Visiting Assistant Professor at KU Leuven (Belgium)
- 10/2019 – 12/2020 Postdoctoral researcher with Sagalassos Project (KU Leuven) on research project "*The role of change in long-term regional development. Approaching the dynamic metabolism of social-ecological systems in Sagalassos/Ağlasun region.*"
- 11/2018 – 12/2020 Substitute Lecturer at KU Leuven (Belgium)
- 11/2018 – 05/2019 Postdoctoral researcher at Suna & İnan Kıraç Research Centre for Mediterranean Civilizations (Koç University, Antalya) with own research project "*Polis formation and synoikismos in southwest Anatolia*".

## EDUCATION

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- 2014-2018 Ph.D. in Archaeology (KU Leuven) Obtained: 15 May 2018  
Dissertation title: *Dynamics of social complexity: Community formation beyond the origin of polis during the Iron Age, Achaemenid, and Hellenistic periods. The case of Düzen Tepe, Sagalassos and southwest Anatolia.*  
Supervisor: Prof. dr. Jeroen Poblome (KU Leuven)  
Jury members:  
Em. Prof. dr. Sander van der Leeuw (Arizona State University)  
Em. Prof. dr. John Bintliff (University of Edinburgh)  
Prof. dr. Christopher Ratté (University of Michigan)  
Prof. dr. Philip Van Peer (KU Leuven)  
Prof. dr. Katelijn Vandorpe (KU Leuven)

- 2011-2012 Master of Arts in Archaeology (KU Leuven)  
Thesis title: *Elite Identity in Late Roman Britain. Material Manifestation and Societal Capacity* (Supervisor: Prof. dr. Jeroen Poblome)
- 2008-2011 Bachelor of Arts in Archaeology (KU Leuven)  
Thesis title: *League Coins in Ancient Greece. A Critical Reflection on the Herakles Drakonopnigon series* (Supervisor: Prof. dr. Johan Van Heesch)

## RESEARCH PROJECTS

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- 2022-2025 *The urban-rural systems of Late Hellenistic to Roman Imperial Sagalassos and present-day Ağlasun. Sustainability of urbanization in times of accelerated growth* at KU Leuven (Role: LoC researcher)  
Disciplines: Archaeology, Forestry, Social Geography, Building Physics and Sustainable Design, Architecture, Data Science, Artificial Intelligence
- 2020-2024 *Network for Agent-based modelling of Social-ecological systems in Archaeology (NASSA)* from Research Foundation Flanders (Role: Coordinator)  
Collaborators: 19 international partners (<https://archaeology-abm.github.io/NASSA-hub/about-us.html>)
- 2020-2022 *Koinè formation in Iron Age to Hellenistic Pisidia* from Suna & İnan Kiraç Research Centre for Mediterranean Civilizations (Role: PI)  
Collaborators: Sagalassos Project, Isparta Deymirel Üniversitesi
- 2020 *Modelling and Simulation in Archaeology*. Microproject Innovative Digital Learning at KU Leuven (Role: PI)
- 2019-2020 *Let's Work Together: Modelling the emergence of social cooperation and complexity formation* from Universitas 21 (Role: Co-PI).  
Disciplines: Archaeology, data science, evolutionary biology, mathematics
- 2018-2019 *Polis formation and synoikismos in southwest Anatolia* from Suna & İnan Kiraç Research Centre for Mediterranean Civilizations (Role: PI)
- 2017-2019 *Sustainability and Resilience in Past & Present Populations* from Academic Foundation Leuven (Role: Co-PI)  
Disciplines: Archaeology, Forestry, Physical and Social Geography, and Demography

## FELLOWSHIPS, GRANTS AND BURSARIES

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- 2021-2022 AKMED Project Support 2021  
Funded by: Suna & İnan Kiraç Research Centre for Mediterranean Civilizations (Koc University, Antalya)  
Project title: *Koinè formation in Iron Age to Hellenistic Pisidia*  
Amount: ₺12,000
- 2021 Wenner-Gren Foundation Grant for Participation at EAA 2021 – Widening Horizons  
Funded by European Association of Archaeologists  
Amount: €45
- 2020-2024 Scientific Research Network Grant (application coordinator)  
Funded by Research Foundation Flanders

Project title: *Network for Agent-based modelling of Social-ecological systems in Archaeology (NASSA)*

Amount: €62,500

2020

Graduate Collaborative Research Awards

Funded by: Universitas 21

Project title: *Let's Work Together: Modelling the emergence of social cooperation and complexity formation.*

Amount: \$3,550

Bridge Grant

Funded by: yrCSS (Young Researchers of the Complex Systems Society)

Project title: *Let's Work Together: Modelling the emergence of social cooperation and complexity formation.*

Amount: €1,000

Microproject Innovative Digital Learning

Funded by: KU Leuven

Project title: Modelling and Simulation in Archaeology

Amount: €10,000

2019

IdeaLabs Grant for Interdisciplinary Research Groups (Extension)

Funded by Academic Foundation Leuven

Project title: *Sustainability and Resilience in Past & Present Populations*

Amount: €1,250

Travel grant for participation in "Winter Workshop on Complex Systems 2020" at Gruyère (Switzerland)

Amount: F200

Bursary for attendance Complex Systems Summer School, Santa Fe Institute

Funded by: Academic Foundation Leuven

Amount: €1,200

Bursary for conference participation at CAA 2019 (Krakow)

Funded by: CAA International

Amount: €480

2018-2019

Postdoc Fellowship for Visiting Scholars

Funded by Tübitak: Scientific and Technological Research Council of Turkey

Amount: ₺30,000

2017-2019

IdeaLabs Grant for Interdisciplinary Research Groups

Funded by Academic Foundation Leuven

Project title: *Sustainability and Resilience in Past & Present Populations*

Amount: €2,500

2014-2018

Ph.D. Fellowship

Funded by Research Foundation Flanders

Amount: Fully funded Ph.D. fellowship

## ACADEMIC PRIZES

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2022

Book Award ODTÜ Geliştirme Vakfı for: Daems, D. 2021. *Social Complexity and Complex Systems in Archaeology*. Routledge.

## TEACHING EXPERIENCE

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- 2022-2023**    *Geoarchaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Ancient Urban Traditions* (MA) at Middle East Technical University (ECTS: 8)  
                  *Anatolian Archaeology* (MA) at Middle East Technical University (ECTS: 8)
- 2021 – 2022**    *Intro to Agent-Based Modelling* (MA) at Middle East Technical University (ECTS: 8)  
                  *Digital Archaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Spatial Analysis in Archaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Geoarchaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Seminar in Settlement Archaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Anatolian Archaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Ancient Urban Traditions* (MA) at Middle East Technical University (ECTS: 8)
- 2020-2021**    *GIS Applications in Archaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Digital Archaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Spatial Analysis in Archaeology* (MA) at Middle East Technical University (ECTS: 8)  
                  *Archaeological Theory, Methods and Practice III: Spatial Analysis* (BA) at KU Leuven (ECTS: 10)  
                  *Themes in Classical Archaeology* (BA) at KU Leuven (ECTS: 6)
- 2019-2020**    *Seminar in Classical Archaeology* (MA) at KU Leuven (ECTS: 9)
- 2018-2019**    *Themes in Classical Archaeology* (BA) at KU Leuven (ECTS: 6)
- 2017-2018**    *Archaeological Theory, Methods and Practice I* (BA) at KU Leuven (Assistant Lecturer)  
                  *Archaeological Theory, Methods and Practice II* (BA) at KU Leuven (Assistant Lecturer)  
                  *Field School* (BA) at KU Leuven (Assistant Lecturer)
- 2015-2016**    *Archaeological Theory, Methods and Practice I* (BA) at KU Leuven (Assistant Lecturer)  
                  *Field School* (BA) at KU Leuven (Assistant Lecturer)

## SELECTED RECENT PUBLICATIONS

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- Daems, D.** and P. Talloen (2022) Moving in together? Synoikismos and polis formation through push-pull dynamics in Sagalassos and southwest Anatolia. *BASOR*
- Daems, D.** (2021) *Social Complexity and Complex Systems in Archaeology*. Routledge.
- Daems, D., Vandam, R., Cleymans, S., Broothaerts, N., Boogers, B., Matsuo, H., Mirhanoğlu, A.** (2021) The social metabolism of past societies. A new approach to environmental changes and societal responses in the territory of Sagalassos (SW Turkey). In: Erdkamp, P., Verboven, K. and Manning, J. (eds.) *Climate and Society in Ancient Worlds. Diversity in Collapse and Resilience*. Palgrave Studies in Ancient Economies. Palgrave.

- Daems, D.** (2021) Social Complexity and Complexity Economics. Studying Socio-Economic Systems at Düzen Tepe and Sagalassos (SW Turkey). In: K. Verboven (Ed.) *Complexity: A New Framework To Interpret Ancient Economy Data*. Palgrave Studies in Ancient Economies, pp. 163-201.
- Daems, D.** (2020) Reassessing the Origin of Polis in Lycia and Southwest Anatolia. *Adalya* 23, pp. 111-132.
- Daems, D.** (2020) On Complex Archaeologies: Conceptualising Social Complexity and its Potential for Archaeology, *Adaptive Behavior*.
- Daems, D.** (2019) Building communities. Presenting a model of community formation and organizational complexity in southwestern Anatolia. *Journal of Anthropological Archaeology* 56, 101110.
- Brughmans, T., Hanson, J., Mandich, M., Romanowska, I., Rubio-Campillo, X., Carrignon, S., Collins-Elliott, S., Crawford, K., **Daems, D.**, ... Ritondale, M. (2019) Formal Modelling Approaches to Complexity Science in Roman Studies: a Manifesto. *Theoretical Roman Archaeology Journal*.

## COMPETENCIES AND SKILLS

Technical skills	Languages
<ul style="list-style-type: none"> <li>• <b>Agent-based modelling:</b> Netlogo<sup>***</sup>, R<sup>*</sup></li> <li>• <b>GIS:</b> QGIS<sup>***</sup>, ArcGis<sup>*</sup></li> <li>• <b>Data analysis:</b> R<sup>***</sup>, Excel<sup>**</sup>, Python<sup>*</sup></li> <li>• <b>Network analysis:</b> Visone<sup>**</sup>, Gephi<sup>**</sup></li> <li>• <b>Database management:</b> Access<sup>***</sup>, SQL<sup>*</sup>, Neo4j<sup>*</sup></li> <li>• <b>Text processing:</b> Word<sup>***</sup>, Markdown<sup>***</sup>, LaTeX<sup>**</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Dutch: Mother tongue</li> <li>• English: Excellent</li> <li>• French: Good</li> <li>• German: Basic</li> <li>• Turkish: Conversational</li> <li>• Greek and Latin: Reading</li> </ul>

## FIELDWORK

- 2022-Current** Pottery studies with the Tell Ya'amoun Regional Survey Project (University of Helsinki)  
Specialisation: Iron Age pottery at Tell Ya'amoun and surroundings (Jordan)
- 2021-Current** Pottery studies with the Komana Archaeological Research Project (METU)  
Specialisation: Iron Age to Hellenistic pottery of Komana (Turkey)
- 2015-Current** Pottery studies with the Sagalassos Project (KU Leuven)  
Specialisation: Iron Age to Hellenistic pottery of Sagalassos and study area (Turkey)
- 2014-2015** Excavation assistant with the Sagalassos Project (KU Leuven)

## SERVICES TO THE FIELD

### Management and administrative positions

- 2021-Current** Coordinator Msc in Digital Archaeology program (Middle East Technical University)
- 2020-Current** Executive council member and main coordinator of NASSA: Network for Agent-based modelling of Social-ecological Systems in Archaeology.
- 2014-Current** Depot manager at Sagalassos Project excavations (Turkey)
- 2014-2021** Administration of the Sagalassos Project  
Tasks: General administration and organization of archaeological campaigns

- Archive manager of digital and physical archives of the Sagalassos Project (KU Leuven)
- 2018-2020 Program Committee, Department of Archaeology (KU Leuven)
- 2018-2019 Member of sub-faculty council and AP fraction council at Faculty of Arts (KU Leuven)
- 2017-2018 Head representative of Assisting Personnel of Research Unit Archaeology, Art history and Musicology at sub-faculty council and AP fraction council at Faculty of Arts (KU Leuven)

## Reviewer activities

Reviewer for: Journal of Open Archaeology Data, PLOS ONE, Journal of Computer Applications in Archaeology, HEROM: Journal of Hellenistic and Roman material culture, Journal of Archaeological Science: Reports, Journal of Artificial Societies and Social Simulation, the Holocene, International Journal of Modelling and Simulation.

## CONFERENCE AND WORKSHOP ORGANISATION

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- 2022 Co-organizer Workshop *Archaeo-Informatics* (22/11-25/11), German Archaeological Institute, Istanbul.
- Session organiser at EAA 2022 (31/08-4/09): *Agent-based modelling of socio-ecological systems in Archaeology. Towards a new research community.*
- Session organiser at EAA 2022 (31/08-4/09): *Roundtable: Towards an Open Platform for Computer Simulations of Past Socio-ecological Systems.*
- Session organiser at CAA 2022 (8/08-11/08): *Roundtable: Towards an Open Platform for Computer Simulations of Past Socio-ecological Systems.*
- 2021 Session organiser at EAA 2021: *A Network for Agent-Based Modelling of Socio-Ecological Systems in Archaeology (NASSA)*
- Organiser of workshop *"From past to future: Deep-time patterns of sustainability and resilience in socio-ecological systems"* at KU Leuven, 11-12 May 2021.
- 2019 Organising committee of *"Computer applications & Quantitative Methods in Archaeology Conference (Netherlands-Flanders Chapter)"* at Leuven, 23-25 October 2019.
- Workshop at Computer Applications & Quantitative Methods in Archaeology (Netherlands/Flanders Chapter): *"Agent-based modelling: Are computer simulations useful for archaeologists?"*
- Workshop at Middle Eastern Technical University (Ankara)  
*"Digital archaeology and model thinking: Hands-on examples, best practices and tutorials in data science, agent-based modelling, and network analysis."*
- 2016 Main organiser of *Synoikismos* seminar *"Complexity and social-ecological systems"* at KU Leuven, 18 February 2016.
- 2014-2020 Organising committee of the monthly *"Leuven Archaeological Research Seminars"* at KU Leuven.

## INVITED TALKS

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- 2022 Computational and Digital Archaeology Seminar Series, University of Cambridge

Invited talk: SagaScape: Simulating human impact and community formation in southwest Anatolia during the first millennium BCE

Archaeology in Action Lectures: East Aegean/Anatolia (to be held on June 6th). The International Association for Archaeological Research in Western & Central Asia

Invited talk: *The Light and Shadow of Hellenism: The Hellenistic Period in Anatolia.*

Public Lectures at Deutsches Archäologisches Institut - Istanbul (to be held March 17th)

Invited talk: *Urban complexity and human-environment interactions in Bronze Age to Hellenistic Anatolia.*

TransPergMikro Workshop: Micro-Regions as Spaces of Socio-ecological Interaction

Invited talk: *Social-Ecological Systems in Archaeology.*

ReForm Lectures: Systemic Dynamics – RessourcenCampus Bochum

Invited talk: *Long-term trajectories of social complexity: Feedback loops, sunk-costs and material prerequisites in social systems.*

Dynamical Systems and Networks Seminars – Université de Namur

Invited talk: *Quantitative shape-based approaches to functional typologies. The case of Sagalassos and environs in southwest Anatolia (Turkey).*

2021

Archaeometry Seminars – Middle East Technical University

Invited talk: *Pottery studies and digital archaeology: Data challenges in the case of Sagalassos.*

Workshop “Network Perspectives in the Archaeology of the Ancient Near East and Eastern Mediterranean” – University of Helsinki

Invited talk: *Networks of Pots in Mediterranean Archaeology.*

Annual meeting of the Center of Excellence in Ancient Near Eastern Empires: Networks – tools, data and research (Helsinki)

Keynote speech: *Connectivity and interaction: Networks as drivers of social complexity.*

2020

Workshop “Procurement of raw materials. Pathways to the Late Neolithic of Central and Western Anatolia”. Adam Mickiewicz University, Poznan.

Invited talk: *Resourceful communities: Strategies of resource exploitation in the area of Sagalassos.*

2019

Guest lecture at Middle Eastern Technical University (Ankara)

Invited talk: *Digital archaeology and model thinking: Social complexity in southwest Anatolia.*

## CONFERENCE PARTICIPATION

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2022

42e Rencontres Internationales D’Archéologie et d’Histoire de Nice Cote D’Azur : Dynamiques des Peuplements, des Territoires et des Paysages. Bilan et Perspectives en Archéologie Spatiale (12/10-14/10), Nice.

Paper title : Simulating human impact and community formation during Iron Age to Hellenistic times in southwest Anatolia

28th Annual Meeting of the European Association of Archaeologists (31/08-4/09), Budapest.

Paper title: PolisABM: Modelling Urban Systems and Social Complexity in Anatolia.



Computer applications & Quantitative Methods in Archaeology Conference (8/08-11/08), Oxford.

Paper title: Conceptual and computational modelling of social complexity and urbanism in Anatolia.

Society for Near Eastern Landscape Archaeology International Symposium

Paper title: Modelling subsistence and resource exploitation as proxies for socio-economic complexity in southwest Anatolia

2021

French Regional Conference on Complex Systems 2021, Lyon [online].

Paper title: *A new framework for understanding causal mechanisms in long-term trajectories of social complexity.*

5th IARPotHP Conference: "From East to West and Back Again: Societies, Economies and Ceramics in the Hellenistic World", Seville [online].

Paper title: *Why do things change anyway? Redefining koine as an emergent social, cultural and economic phenomenon at Sagalassos.*

Computer applications & Quantitative Methods in Archaeology Conference, Limassol [online].

Paper title: *PolisABM: Modelling polis formation, urban systems and social complexity in the eastern Mediterranean from Iron Age to Hellenistic times.*

International Conference on Resources and Transformation in Pre-modern Societies, Bochum [online].

Paper title: *Simulating Resource Exploitation Strategies in Iron Age to Hellenistic Communities in Southwest Anatolia.*

27th Annual Meeting of the European Association of Archaeologists, Kiel [online]

Paper title: Quantitative shape-based approaches to functional typologies in Late Bronze Age and Iron Age pottery from southwest Anatolia

2019

4th IARPotHP Conference: Manufacturers and Markets. The Contributions of Hellenistic Pottery to Economies Large and Small, Athens.

Paper title: *The Hellenistic Pottery from Sagalassos: A General Framework of Typo-Chronology, Production, Consumption and Distribution.*

Computer applications & Quantitative Methods in Archaeology Conference (Netherlands/Flanders Local Chapter), Leuven.

Paper title: *Modelling the origin of polis in Anatolia. From conceptual to computational approaches.*

Theoretical Archaeology Group Conference, London.

Paper title: *Conceptual modelling of social complexity trajectories and inequality in urban networks.*

Computer applications & Quantitative Methods in Archaeology Conference, Krakow.

Paper title: *Modelling the origin of polis in Anatolia. From conceptual to computational approaches.*

2018

Conference on Complex Systems, Thessaloniki.

Paper title: *Materialising complexity. A conceptual model of material culture, social complexity and mechanisms of change.*

24<sup>th</sup> Annual Meeting of the European Association of Archaeologists, Barcelona.

Paper title: *Carrying Capacity. A superseded concept or window of opportunities?*



19<sup>th</sup> International Congress of Classical Archaeology, Köln/Bonn.

Paper title: *Tracing organisation of labour and material production at Sagalassos*.

Theoretical Roman Archaeology Conference, Edinburgh.

Paper title: *Attracting cities: The role of urban attraction poles in a model of community formation and social complexity dynamics*.

2017 Conference on Complex Systems, Cancun.

Paper title: *Complexity Matters. Uncovering mechanisms of social complexity in the past*.

Quantification of Material Culture Workshop, Barcelona

Paper title: *Counting sherds is complex business. Quantifying micro dynamics in social complexity through material culture*.

2016 Conference on Complex Systems, Amsterdam.

Paper title: *Dynamics of Social Organisation. Use of social practices and adaptive cycles to study past societies*.

2015 Second Conference of IARPotHP, Lyon.

Paper title: *Classical and Hellenistic Sagalassos. The ceramic evidence*.

International Mediterranean Survey Workshop, Göttingen.

Paper title: *Origin of polis 2.0. A case from SW Anatolia. What can survey data from Sagalassos and environs tell us?*

## PUBLIC OUTREACH

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2021 Contribution to the yearbook of the Sagalassos Project: Poblome, J., Beaujean, B., Talloen, P., **Daems**, D., Uytterhoeven, I., Doperé, F. and Torun E. "Van plek tot plein, de Boven Agora". Leuven: *Peeters Publishers*.

Perspective piece: **Daems**, D. Rethinking Connectedness from Past to Future. *Maja. Magazine of the Young Academy: Pandemic Edition*, pp. 20-24.

2020 Finalist 'Falling Walls Lab Leuven' (Belgium)

Title: Breaking the walls of past, present and future complexity.

Lecture at Rozenberg (3<sup>rd</sup> - 4<sup>th</sup> year secondary school) (Mol, Belgium)

Title: Archaeology and studying life in the ancient world.

2019 Contribution to exhibition catalogue: Poblome, J. and D. **Daems**. 'Once upon a Sagalassos: a story about origins and emergence'. In: Poblome, Torun, Talloen, and Waelkens (eds.) *Meanwhile in the Mountains : Sagalassos*, 59–69. Istanbul: Yapı Kredi Yayınları.

Contribution to the yearbook of the Sagalassos Project: Poblome, J., Cleymans, S., Beaujean, B., **Daems**, D., Vandam, R. "Hoe doen we het?". Leuven: *Peeters Publishers*.

2018 Lecture at Rozenberg (3<sup>rd</sup> - 4<sup>th</sup> year secondary school) (Mol, Belgium)

Title: Life in the ancient world.

2017 Contribution to the yearbook of the Sagalassos Project: Poblome, J., Vandam, R., **Daems**, D., Kaptijn, E., Talloen, P., Van Loo, M., Verstraeten, G., De Cupere, B., Marinova, E., Janssen, E., Muys, B., and Kocabiyik, C. "En de boer, hij ploegde voort". Leuven: *Peeters Publishers*.

- 2016      Lecture at Saint-Dymphna College (6<sup>th</sup> year secondary school) (Geel, Belgium)  
Title: Sagalassos. The story of an ancient city.
- Lecture for Association of Historians in Geel (Belgium)  
Title: Sagalassos. The story of an ancient city.
- 2015      Lecture at Saint-Dymphna College (6<sup>th</sup> year secondary school) (Geel, Belgium)  
Title: Sagalassos. The story of an ancient city.

## PROFESSIONAL AFFILIATIONS

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- Network for Agent-based modelling of Social-ecological systems in Archaeology
- Complex Systems Society
- Young Researchers of the Complex Systems Society
- Pages (Past Global Changes) Early Career Network
- CAA International (Computer Applications & Quantitative Methods in Archaeology)
- CAA Special Interest Group on Scientific Scripting Languages in Archaeology
- European Association of Archaeologists (EAA)
- The International Association for Classical Archaeology
- International Association for Research on Pottery of the Hellenistic Period